Creativity Research Journal
1998, Vol. 11, No. 2, 173–177

POINT–COUNTERPOINT

The Case for Domain Specificity of Creativity

John Baer
Rider University

ABSTRACT: For many years creativity researchers assumed that creativity was rooted in general, domain-transcending skills or traits. A growing body of evidence suggests that creative performance is domain specific. This has led both to changes in thinking about the nature of creativity and to a reexamination of previous evidence and assumptions about the generality of creativity. More research is needed to settle this issue; until then, creativity trainers would be wise to assume that creativity is domain specific. This assumption, even if incorrect, is less likely to nullify their efforts than the assumption of content generality.

Like Humpty Dumpty, the idea that creativity is rooted in general, domain-transcending personality traits or cognitive processes once sat high above the theoretical fray, safely removed from attack and appearing to be in no danger of falling from its lofty perch. Psychologists interested in creativity blithely assumed that such traits or processes existed. The important questions centered on how these traits or processes might best be discovered, not on the wisdom of the search.

It is perhaps natural that psychologists would seek general theories that could explain all kinds of creativity at once. Such theories would be far more powerful than ones that dealt only with one restricted kind of creativity. But like Humpty Dumpty, general theories of creativity have had a great fall. Growing discontent with such theories (Brown, 1989) and new research showing that the cognitive skills underlying creative thinking must be specific to rather narrowly defined content domains (Baer, 1991, 1993; Runco, 1989) have shattered hopes for a general cognitive theory of all creativity.[1] Like Humpty Dumpty, putting such theories back together again seems, at best, unlikely. Despite their limited range, we may have to settle for many small theories rather than a single grand one. Such a fragmented approach is naturally less satisfying than the search for a unified and all-encompassing theory, but it fits the evidence better and will provide more useful direction to new theories and research.

To make the case for domain specificity of creativity, one needs to demonstrate (a) that compelling evidence exists for domain specificity in creative performance and (b) that evidence previously interpreted as supporting general theories of creativity does not actually support such interpretation. The next two sections of this article briefly do those two things. The final section explains why, if one is undecided, assuming domain specificity until the issue is settled makes sense.

A Note on Terminology

A key word in this debate, *domain,* has notoriously fuzzy boundaries. The evidence for the domain speci-

I thank Jonathan Plucker for initiating this collaborative project for *Creativity Research Journal.*

Manuscript received March 26, 1997; revision received May 13, 1997; accepted June 15, 1997.

Correspondence and requests for reprints should be sent to John Baer, Memorial Hall 102P, Rider University, Lawrenceville, NJ 08648–3099.

[1]The retreat in psychology from general theories has not been limited to creativity. Developmental and cognitive psychologists have also moved from domain-general to domain-specific theories; see, for example, Karmiloff-Smith (1992).

ficity of creativity includes both specificity in the sense of broadly defined cognitive domains (e.g., linguistic, mathematical, musical) and more narrowly defined (and more numerous) task or content domains (e.g., poetry writing, story writing, collage making). The latter are what some prefer to call *microdomains* (Karmiloff-Smith, 1992), and this kind of specificity is sometimes termed *task specificity* rather than *domain specificity*. Although I have argued elsewhere (see especially Baer, 1993) for the more extreme position (that creativity is task specific), the position I argue here is the larger and more general one—that creativity is domain specific. The domain-specific position should be thought of as including task specificity as just one of many possible variations. Other domain-specific theories of creativity are Gardner's (1983, in press) several intelligences and the "domain-relevant skills" of Amabile's (1983a, 1983b, 1996) componential theory (which, one should note, also includes a general "creativity-relevant skills" component).

Evidence for Domain Specificity

Although the idea of domain specificity of creativity is not new (Brown, 1989), the strongest evidence for domain specificity comes from fairly recent studies of creative performance in which participants create more than one thing (such as poems, stories, mathematical puzzles, collages, and drawings) and each artifact is judged for creativity by appropriate experts (for validation of this consensual assessment technique, see Amabile, 1982). The correlations among the creativity ratings of products made by the same person in these studies have been quite low, especially when the effects of differences in academic ability have been held constant statistically.

For example, Baer (1991) had eighth-grade students create four different kinds of creative products (two of which were primarily verbal, one primarily mathematical, and one that involved both words and numbers). Of the six correlations among creativity ratings of these four kinds of creative products, three were negative and three positive with an average correlation of only +.06; when cognitive ability (as measured by standardized test scores) was held constant statistically, the average correlation fell to –.05. Similarly, Runco (1989) found correlations averaging just .18 among expert ratings of the creativity of three different kinds of artwork produced by fourth-, fifth-, and sixth-grade students. And in a series of studies with participants ranging in age from second grade through early adulthood, Baer (1993) found that, among all age groups, correlations of creativity ratings on various products (including poems, oral and written stories, mathematical puzzles, and collages) were consistently low, even with correction for attenuation due to measurement error.[2] Squaring these correlation coefficients, one finds that the amount of shared variance in these studies was almost always less than 5%. If any across-domain generality really exists, it must be limited in size to this tiny degree of shared variance, and it must therefore be vanishingly small.

Kogan (1994) suggested that limited sample size and restriction of range may have limited the size of the observed correlations in some of Baer's (1991, 1993) studies. For example, in the initial study (Baer, 1991) of 50 eighth graders, all participants were in the upper quartile academically. A partial replication (Baer, 1994) of the 1991 study was therefore conducted, this time with the entire eighth grade ($N = 128$) of a middle school with an academically diverse population. Just two tasks, poetry writing and story writing, were used; these two had one of the highest correlations (.23) in the 1991 study. In the 1994 replication, this correlation actually dropped slightly (to .19), suggesting that the design of the earlier study had not prejudiced the results.

One should note that such performance assessments have been shown to have fairly robust long-term stability, even though they are in essence single-item tests. The story-writing creativity of 9-year-old participants, for example, correlated .58 with the story-writing creativity of the same participants 1 year later (Baer, 1994), which is not far off the .60 to .80 stability coefficients found for IQ test scores at this age (Kogan, 1983).

Two training studies (Baer, 1994, 1996) have also demonstrated that training in task-specific creativity-relevant skills increases creative performance only on tasks directly related to the training. In one of these

[2]Some controversy exists about the use of a correction for attenuation, and experts (e.g., Cohen & Cohen, 1983; Nunnally, 1978) do not always agree on when it may be appropriately used. Nunnally (1978), for example, noted that it can "provide a way of fooling oneself into believing that a 'better' correlation has been found than that actually evidenced in the available data" (p. 237). How it would affect these data is noted here (and in Baer, 1993) simply to forestall arguments that measurement error produced artificially low correlations.

studies, Baer (1996) taught 79 seventh-grade students poetry-related divergent-thinking skills over a several-week period. These students and a matched group of 78 students later wrote both poems and stories, which were then rated for creativity by experts. A 2 × 2 analysis of variance revealed a significant Group × Task effect with the experimental group writing much more creative poems but not stories. This seems at first to contradict the reported success of many general creativity-training programs. However, the success of these programs may be due to the fact that such programs typically employ a wide variety of content and thus teach a wide variety of domain-specific skills—even if their goal is to teach a general, all-purpose creative-thinking skill (Baer, 1993, 1994; Mansfield, Busse, & Krepelka, 1978; Mayer, 1983).

Problems with Evidence for Generality

An important source of evidence for generality in creativity comes from self-report scales. For example, Hocevar (1976) found "low to moderate" (p. 869) correlations (ranging from .17 to .76) among self-report indexes of creativity in various domains for college students. Although Hocevar (1981) claimed that such self-report scales were "perhaps the most easily defensible way to identify creative talent" (p. 455), Brown's (1989) judgment that, in assessing creativity, "self-report data and retrospective case histories are generally unverifiable" (p. 29) makes one hesitant to rely very heavily on such data. The limitations of self-report data extend well beyond creativity research, of course. In fact, questions about the validity and appropriate use of self-report data were the subject of a recent two-day National Institutes of Health conference on "The Science of Self-Report: Implications for Research and Practice" (Azar, 1997; Rowe, 1997), where both basic problems with self-report data (such as poor recall and both intentional and unintentional distortions by participants) and ways to improve its validity were discussed.

When self-report scales are used to assess within-subject consistency across several such scales, as is the case when they are used to argue for the generality of creativity, a special kind of caution must be raised. Such within-subject consistency might represent general creativity-relevant abilities, attitudes, or interests; however, it might also represent something very different, such as individual differences in styles of response. As an example of how this might occur, consider the following sample item from Hocevar's (1976) self-report questionnaire: "How often have you ... won an award for some achievement in literature?" The response options were (a) *never,* (b) *once or twice,* (c) *3–5 times,* or (d) *more than 5 times.* Note, however, that what constitutes an "award" was not clearly defined. Depending on the standard one chooses, the same person might legitimately respond with a, b, c, or d. Participants with high standards for what it means to have "won an award" in one domain will probably have consistently high standards across domains, however, and other participants will probably adopt a consistently low standard. The result of different participants' adopting different standards—a matter of response style, not creativity—will necessarily be spuriously high creativity correlations across domains.

Even if one accepts the data generated by self-report scales at face value, problems exist in using them to advance the case for generality. Runco (1987) scored self-report indexes of creativity in several performance areas in two ways: by quantity of achievement and by quality of achievement. Although a modest correlation ($Mdn\ r = .46$) exists when looking at self-reported quantity of creative activity, the median correlation of self-reported quality of creative activity was only .16.

One area of creativity theory and assessment has assumed and widely promoted the idea of generality in creative-thinking skills. Divergent thinking has dominated the field of creativity (and especially creativity testing) since Guilford's (1950) American Psychological Association presidential address (Kogan, 1983; Runco, 1991; Torrance & Presbury, 1984; Wallach, 1970). Although Guilford's initial conception included a large number of more or less independent divergent-thinking factors, this view "was supplanted by a focus on ideational fluency as a general associative process, a sort of 'g' factor underlying virtually all types of creativity" (Brown, 1989, p. 21).

The case against divergent thinking as an all-purpose creative-thinking skill has been made elsewhere (e.g., Anastasi, 1982; Baer, 1993; Brown, 1989; Crockenberg, 1972; Hocevar, 1981) and will not be reviewed here in detail. Brown (1989) summarized an important aspect of the problem with divergent thinking as follows:

> We can see why the initial promise of divergent thought has not been fulfilled. Implicitly or explicitly, creativity theorists viewed divergent thought as a fairly general process that

> would account for a variety of creative activities. But several lines of research and theory (e.g., Albert, 1983; Amabile, 1983a, 1983b; Feldman, 1986; Gardner, 1983; Hocevar, 1981; Wallach, 1986) are converging on the conclusion that talent and creativity are domain specific whether by dint of "natural" proclivity, extensive training, and/or education. (p. 22)

Although divergent thinking appears to have failed both as a general theory and as a method for testing creativity, it is worth noting that divergent thinking can nonetheless be a significant contributor to creativity without being a general, domain-transcending thinking skill. Divergent thinking may be quite narrowly domain specific; that is, divergent thinking in collage making may be very different, as a cognitive skill, than divergent thinking in storytelling. The fact that the two look similar from the outside, as it were, does not mean that they are the same on the inside (that is, as cognitive processes). Studies of domain-specific creativity training (Baer, 1993, 1994, 1996) support such an interpretation.

If in Doubt, Why Domain Specificity Is the Wiser Choice

Even if one believes the jury is still out on the specificity–generality question, it makes sense to assume, for the time being, that creativity is domain specific makes sense, at least for those who wish to promote creative thinking. The reason is simple. Even if the domain specificity hypothesis is wrong, nothing will be lost by basing creativity training on the specificity assumption; but if the domain-specificity hypothesis is correct and one bases one's training on the assumption that creative-thinking skills on one task will transfer to any other creativity-relevant task, then much of one's effort to improve one's creative-thinking skills may be wasted (Baer, 1997).

An example will help clarify this point. Suppose one wants to improve one's overall creative-thinking skill, perhaps by doing divergent-thinking exercises. The domain-specific hypothesis would suggest practicing divergent thinking using a wide variety of tasks. Conversely, under the all-creative-thinking-is-the-same hypothesis, what tasks one used would not matter. They could all be very similar in content, or they could be quite varied.

The upshot of this is that if the generic hypothesis is correct, then the content of the exercises one uses does not matter and nothing is lost by making the incorrect (domain specificity) assumption. But if the specificity hypothesis is correct and one chooses all exercises from the same domain (which the generic hypothesis allows), then the loss will be significant, as any improvement in creative thinking will be limited to the single content domain from which the exercises are chosen.

It should be noted that the case for domain specificity addresses the question of whether enduring personality traits or cognitive mechanisms exist that influence creativity in all domains. Although the answer to that question appears to be negative, this does not preclude other more transient factors that might influence creativity across domains. One example of such a transient, creativity-relevant, domain-transcending factor is the kind of motivational constraints present in a given environment (Amabile, 1983a, 1996).

References

Amabile, T. M. (1982). Social psychology of creativity: A consensual assessment technique. *Journal of Personality and Social Psychology, 43,* 997–1013.

Amabile, T. M. (1983a). *The social psychology of creativity.* New York: Springer-Verlag.

Amabile, T. M. (1983b). The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology, 45,* 357–376.

Amabile, T. M. (1996). *Creativity in context: Update to the social psychology of creativity.* Boulder, CO: Westview.

Anastasi, A. (1982). *Psychological testing.* New York: Macmillan.

Azar, B. (1997, January). Poor recall mars research and treatment. *APA Monitor, 28,* 1, 29.

Baer, J. (1991). Generality of creativity across performance domains. *Creativity Research Journal, 4,* 23–39.

Baer, J. (1993). *Divergent thinking and creativity: A task-specific approach.* Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Baer, J. (1994). Divergent thinking is not a general trait: A multi-domain training experiment. *Creativity Research Journal, 7,* 35–46.

Baer, J. (1996). The effects of task-specific divergent-thinking training. *Journal of Creative Behavior, 30,* 183–187.

Baer, J. (1997). *Creative teachers, creative students.* Boston: Allyn & Bacon.

Brown, R. T. (1989). Creativity: What are we to measure? In J. A. Glover, R. R. Ronning, & C. R. Reynolds (Eds.), *Handbook of creativity* (pp. 3–32). New York: Plenum.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Crockenberg, S. B. (1972). Creativity tests: A boon or boondoggle for education? *Review of Educational Research, 42,* 27–45.

Feldman, D. H. (1986). *Nature's gambit.* New York: Basic Books.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: Basic Books.

Gardner, H. (in press). Is there a moral intelligence? In M. A. Runco, R. Keegan, & S. Davis (Eds.), *Festschrift for Howard Gruber.* Cresskill, NJ: Hampton Press.

Guilford, J. P. (1950). Creativity. *American Psychologist, 14,* 205–208.

Hocevar, D. (1976). Dimensionality of creativity. *Psychological Reports, 39,* 869–870.

Hocevar, D. (1981). Measurement of creativity: Review and critique. *Journal of Personality Assessment, 45,* 450–464.

Karmiloff-Smith, A. (1992). *Beyond modularity: A developmental perspective on cognitive science.* Cambridge, MA: MIT Press.

Kogan, N. (1983). Stylistic variation in childhood and adolescence: Creativity, metaphor, and cognitive styles. In P. H. Mussen (Ed.), *Handbook of child psychology: Vol. 3. Cognitive development* (4th ed., pp. 628–706). New York: Wiley.

Kogan, N. (1994). Diverging from divergent thinking. *Contemporary Psychology, 39,* 291–292.

Mansfield, R. S., Busse, T. V., & Krepelka, E. J. (1978). The effectiveness of creativity training. *Review of Educational Research, 48,* 517–536.

Mayer, R. E. (1983). *Thinking, problem solving, cognition.* New York: Freeman.

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.) New York: McGraw-Hill.

Rowe, P. (1997, January). The science of self-report. *APS Observer, 10,* 3, 35–38.

Runco, M. A. (1987). The generality of creative performance in gifted and nongifted children. *Gifted Child Quarterly, 31,* 121–125.

Runco, M. A. (1989). The creativity of children's art. *Child Study Journal, 19,* 177–190.

Runco, M. A. (1991). *Divergent thinking.* Norwood, NJ: Ablex.

Torrance, E. P., & Presbury, J. (1984). The criteria of success used in 242 recent experimental studies of creativity. *Creative Child and Adult Quarterly, 9,* 238–243.

Wallach, M. A. (1970). Creativity. In P. H. Mussen (Ed.), *Carmichael's handbook of child psychology* (Vol. 1, 3rd ed., pp. 1211–1272). New York: Wiley.

Wallach, M. A. (1986). Creativity testing and giftedness. In F. D. Horowitz & M. O'Brien (Eds.), *The gifted and talented: Developmental perspectives* (pp. 99–123). Washington, DC: American Psychological Association.